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Indian Standard

LINK TYPE THREAD TAKE UP LEVER SUB ASSEMBLY FOR INDUSTRIAL SEWING MACHINES — SPECIFICATION

ICS 61.080

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2000

Price Group 3

Sewing Machines Sectional Committee, ME 29

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Sewing Machines Sectional Committee had been approved by the Mechanical Engineering Division Council.

This standard has been formulated and published to facilitate standardization of link type thread take up lever sub assembly which is an essential component of industrial sewing machine and is being also used in latest improved version of sewing machines for domestic purposes.

In preparing this standard, assistance has been derived from the following standard issued by the Japanese Industrial Standard Committee:

JIS B 9083-1989 'Link type thread take up lever sub assembly for industrial sewing machines'.

For the purpose of deciding whether a particular requirement of this standard is complied with,the final value, observed or calculated, expressing the results of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

LINK TYPE THREAD TAKE UP LEVER SUB ASSEMBLY FOR INDUSTRIAL SEWING MACHINES — SPECIFICATION

1 SCOPE

This standard covers the requirements for link type thread take up lever sub assembly used for sewing machines of the lock stitch, straight stitch flat type stitch among the industrial sewing machines.

2 REFERENCES

The Indian Standards given in Annex A are necessary adjuncts to this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreement based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated in Annex A.

3 MAIN PARTS

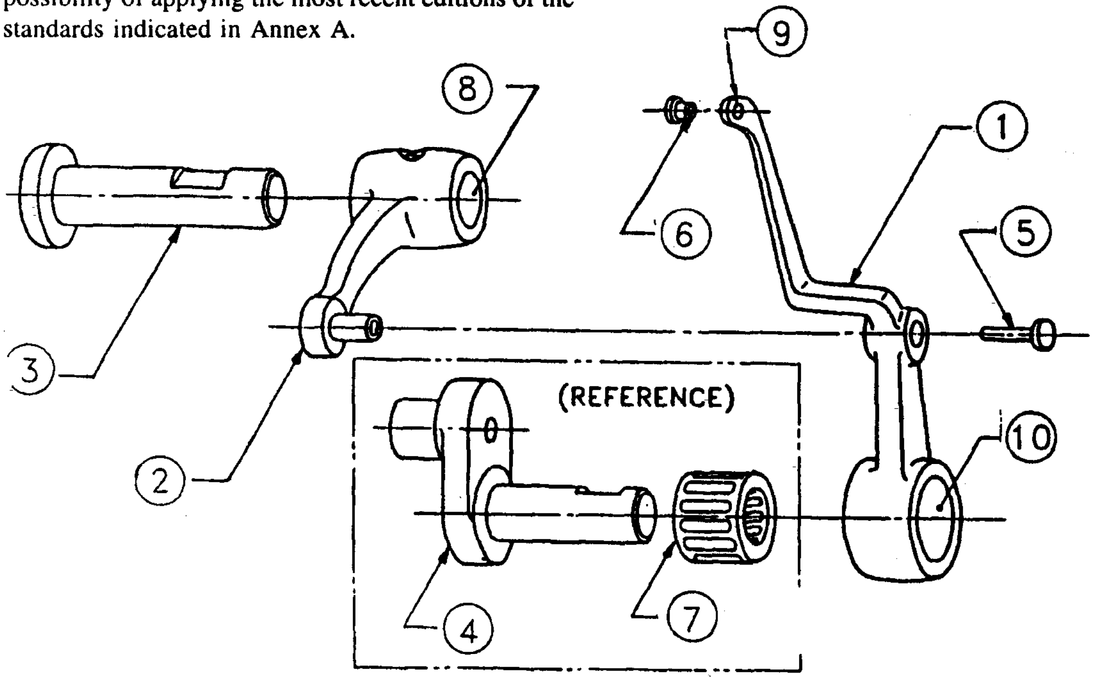
Main parts of the link type thread take up lever sub assembly shall be as shown in the Fig. 1.

4 TYPE

Link type thread take up lever sub assembly shall be of following two types:

Type A : Thread take up lever sub assembly without needle roller bearing.

Type B : Thread take up lever sub assembly with needle roller bearing.



PART NO.	DESCRIPTION
1	THREAD TAKE UP LEVER BODY
2	THREAD TAKE UP LEVER LINK
3	THREAD TAKE UP LEVER STUD
4	THREAD TAKE UP LEVER NEEDLE BAR CRANK
5	THREAD TAKE UP LEVER HINGE PIN
6	THREAD TAKE UP LEVER EYELET BUSHING
7	NEEDLE ROLLER BEARING
8	THREAD TAKE UP LEVER LINK HINGE STUD HOLE
9	THREAD TAKE UP LEVER THREAD EYELET FOR BUSHING
10	NEEDLE BAR CRANK HOLE

FIG. 1 NAME OF THE MAIN PARTS OF LINK TYPE THREAD TAKE UP LEVER SUB ASSEMBLY FOR INDUSTRIAL SEWING MACHINES

4.1 Classification

Classification of link type thread take up lever sub assembly is based on the shape of the thread take up lever. This can be any one of the following classes:

Class 1, Class 2, Class 3, Class 4 and Class 5.

5 MATERIAL

Following materials are used for manufacturing of link type thread take up lever.

5.1 Thread Take Up Lever Body (Part No. 1)

Link type thread take up lever body shall be manufactured from suitable steel which can be hardened to provide the required hardness.

5.2 Thread Take Up Lever Link (Part No. 2)

Link type thread take up lever link shall be manufactured from suitable steel which after heat treatment fulfills the requirements for wear resistance.

5.3 Thread Take up Lever Stud (Part No. 3)

Link type thread take up lever stud shall be manufactured from suitable steel such as C-10 of Table 1 of IS 1570 (Part 2/Sec 1).

5.4 Thread Take up Lever Needle Bar Crank (Part No. 4)

Link type thread take up lever needle bar crank shall be manufactured from suitable steel such as C-10 of Table 1 of IS 1570 (Part 2/Sec 1).

5.5 Thread Take Up Lever Hinge Pin (Part No. 5)

Link type thread take up lever hinge pin shall be manufactured from suitable steel.

5.6 Thread Take Up Lever Eyelet Bushing (Part No. 6)

The eyelet bushing shall be manufactured from suitable steel such as C-10 of Table 1 of IS 1570 (Part 2/Sec 1) composition equivalent to:

C 0.15 to 0.25 Mn 0.10 to 0.50 Si 0.30 to 0.70
Cr 16 to 20 Ni 1.50 to 2.50

6 HARDNESS

Link type thread take up lever sub assembly shall satisfy the hardness requirements as given below:

Sl No.	*Component*	*Hardness Required HV*
1	Lever	350, *Min*
2	Link	300-350
3	Stud	300-350
4	Needle crank	300-350
5	Hinge pin	350, *Min*
6	Eyelet bushing	600, *Min*

The hardness shall be measured of all the components as per IS 1501 or IS 12783.

7 DIMENSIONS

7.1 Shape and dimensions of the link type thread take up lever body and thread take up lever link shall be as given in Table 1.

7.2 Stud

The link type thread take up lever hinge stud shall be any one of the following types:

a) Stepless thread take up lever link hinge stud (Fig. 2A).
b) Stepped thread take up lever link hinge stud (Fig. 2B).

Shape and dimensions of the stud of the link type thread take up lever shall be as given in Fig 2A and 2B and Table 2.

7.3 Neelde Bar Crank

Thread take up lever needle bar crank. For shape and dimensions, *see* Table 3.

7.4 Needle Bearing

Suitable needle bearing shall be as per IS 4215 or its equivalent (*see* Fig. 3).

8 TESTING

8.1 Parallelism and Circularity

8.1.1 *Parallelism*

The parallelism between the needle bar crank hole of the thread take up lever body and the thread take up lever link hinge stud hole of the thread take up lever link shall be as shown in Table 4 when measured at the minimum moving positions (point *A* and point *B*) and the maximum moving positions (point *C* and point *D*) of the axis of the thread take up lever link hinge stud hole of the thread take up lever link, based on the axis of the needle bar crank hole of the thread take up lever body, as shown in Fig. 4 by using a dial gauge as per IS 2092 or a measuring instrument having an equal or higher accuracy.

8.2 Circularity

The circularity of shafts and holes shall be within 0.005 mm.

9 MANUFACTURING, WORKMANSHIP AND FINISH

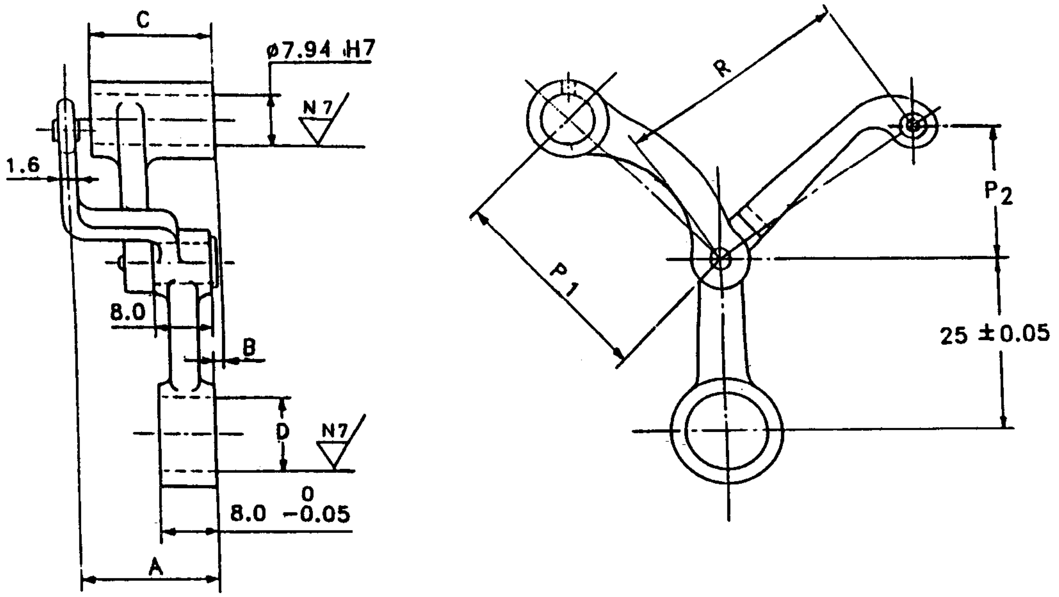
9.1 Manufacturing

The product shall meet the following requirements:

Table 1 Shape and Dimensions of the Link Type Thread Take Up Lever Body

(*Clause* 7.1)

All dimensions in millimetres.



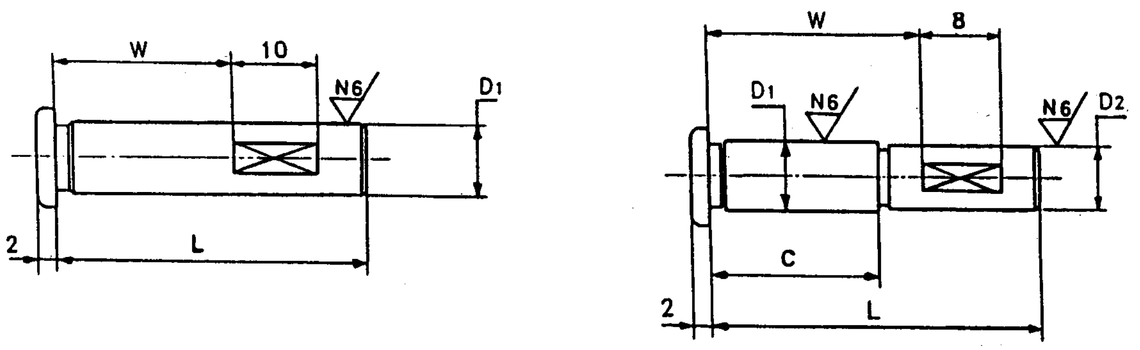
Type	Class	Dimensions							
		P_1	P_2	R	D		A	B	C
		Tolerance							
		±0.5	–	–	H_7	M_6	–	–	–
A	1	29.3	19.8	34.5	7.94	–	19.2	1.0	18
B	1	29.3	21	37.5	–	11.94	22.2	1.5	18
	2		19	33.84		12.0	18.9	1.0	18
	3					12			
	4	28.8	19.15	38.30		11.94	19.7	−3.6	14
	5					12.00			

NOTES

1 The minus sign attached to dimension *B* of the Type B (classes 4 and 5) implies that the measurement is taken in the left direction from the right end of the needle bar crank hole.

2 Refer IS 919 (Part 1) for values of H_7 and M_6 where tolerances have not been specified may be specified from IS 2102 (Part 1).

3 Dimensions on which surface roughness should be as per IS 3073 and checked as per IS 10707.



2A STEPLESS STUD

2B STEPPED STUD

FIG. 2 STUDS

Table 2 Shape and Dimensions of Link Type Thread Take Up Lever Stud

(*Clause* 7.2)

All dimensions in millimetres.

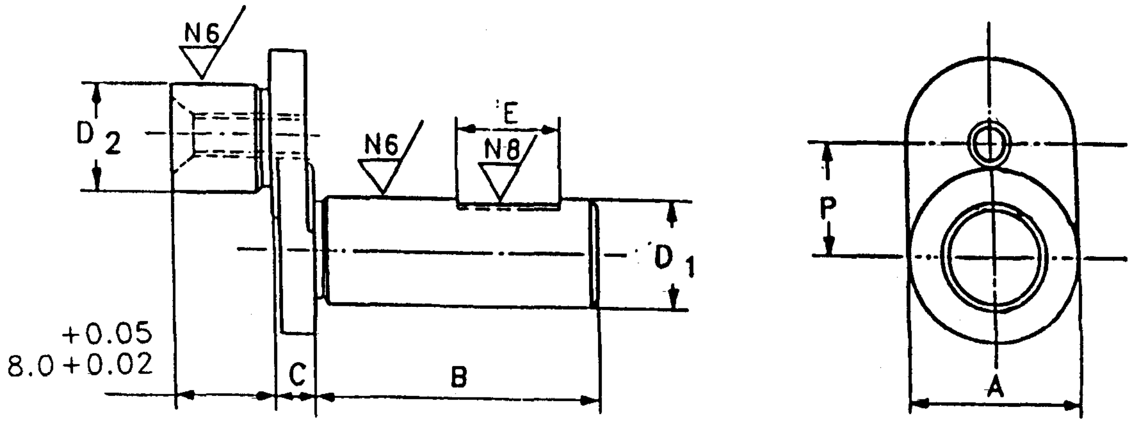
Type of Stud	Type and Class	Dimensions				
		C	*L*	*W*	D_1	D_2
		h_6	±0.1		h_6	
Stepless	A and B	—	36.0	20.00	7.94	—
Stepped	A	17.6	38.0	22.5	7.94	7.54
	B 1, 2, 3	17.6	38.0	22.5	7.94	7.54
	B 4 and 5	13.4	36.5	19	7.94	7.54

NOTE — For value of h_6, please refer to IS 919 (Part 1).

Table 3 Shape and Dimensions of the Thread Take Up Lever Needle Bar Crank

(*Clause* 7.3)

All dimensions in millimetres.



Type	Class	Dimensions						
		A	*B*	*C*	D_1	D_2	*P*	*E*
A	—	$12.0^{+0.1}_{-0}$	$20.7^{+0.1}_{-0}$	$3^{+0.05}_{-0}$	$7.94^{+0}_{-0.009}$	$7.94^{+0}_{-0.009}$	7.94 ±0.02	8
B		Tolerance h_6					±0.02	8
	1 2 3	14.0	24.8	3.3	7.94	7.94	7.94	
	4 5	14.0	24.2	3.8	8.0	8.0	7.40	

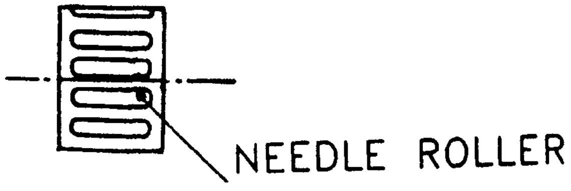


FIG. 3 NEEDLE BEARING

Table 4 Parallelism

(*Clause* 8.1.1)

All dimensions in millimetres.

Type	Parallelism (per 100 mm)
Type A	Within 0.15
Type B	Within 0.10

a) The thread eyelet shall be smoothly finished so as to allow smooth sliding of the thread.

b) The joint of the thread take up lever body and thread take up lever link (set) shall operate smoothly.

c) Respective parts shall be firmly assembled and function satisfactory.

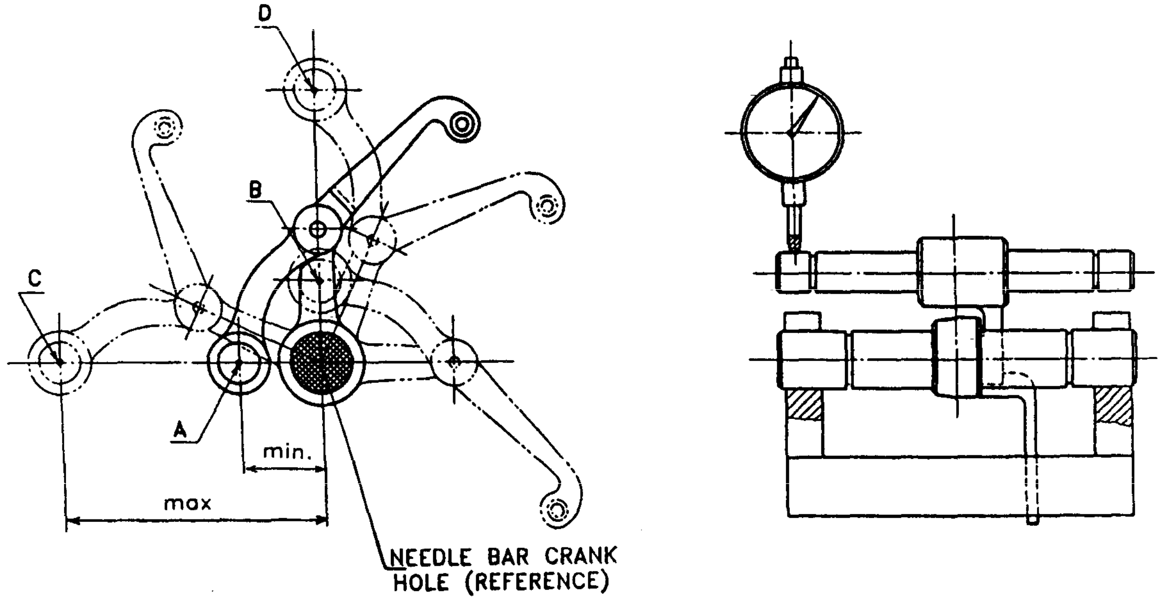


FIG. 4 MEASURING METHOD

9.2 The workmanship and finish shall meet the following requirements:

a) Respective parts shall be finished properly and, free from such defects as cracks, cuts, burns, fins, and rust.

b) The thread take up lever body shall be nickel chrome plated conforming to at least service grade No.1 with designation Fe/Ni 10b Cr of IS 1068. The thickness of coating shall not be less than 0.010 mm. The coating shall be free from flaws, unevenness, cracks, stains and other defects.

10 INSPECTION

10.1 Inspection shall be carried out relating to various requirements as given in this standard, as agreed to between the purchaser and the supplier.

Unless otherwise specified single sampling plan with inspection level II and AQL of 2.5 percent as given in Tables I and II of IS 2500 (Part 1).

10.2 Samples shall be drawn at random as per IS 4905.

11 MARKING

11.1 Link type thread take up lever for industrial sewing machines shall be indelibly marked with the following information:

a) Type and classification number,

b) Lot No./Batch No. to facilitate traceability, and

c) Name of manufacturer/brand name/trademark.

11.2 BIS Certification Marking

The product may also be marked with the Standard Mark.

11.2.1 The use of the Standard Mark is governed by the provisions of the *Bureau of Indian Standards Act*, 1986 and the Rules and Regulations made thereunder. The details of conditions under which the licence for the use of Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

12 PACKING

12.1 Each link type thread take up lever sub assembly shall be wrapped in 400 G LDPE or equivalent bag after giving a suitable anti-rust coating and then packed in paper board, cartons in accordance with the best prevalent trade practices.

12.2 Each packing box shall bear the following information:

a) Description of contents,

b) Batch No./Lot No./date of packing,

c) Quantity per pack,

d) Type and Classification No.,

e) BIS Standard Mark (if applicable), and

f) Name of manufacturer/brand name/trademark.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
919 (Part 1) : 1993	ISO system of lmits and fits: Part 1 Bases of tolerances deviations and fits (*second revision*)
1068 : 1993	Electroplated coatings of nickel plus chromium and copper plus nickel plus chromium (*third revision*)
1501 : 1969	Methods of Vickers hardness test for metallic materials
1570 (Part 2/ Sec 1) : 1979	Schedule for wrought steels: Part 2 Carbon steels (unalloyed steel), Section 1 Wrought products (other than wire) with specified chemical composition and related properties (*first revision*)
2092 : 1983	Plunger type dial gauges (*first revision*)
2102 (Part 1) : 1993	General tolerances: Part 1 Tolerances for linear and angular dimensions without individual tolerance indication (*third revision*)
2500 (Part 1) : 1992	Sampling inspection procedure: Part 1 Attribute sampling plans indexed by acceptable quality level (AQL) for lot by lot inspection
3073 : 1967	Assessment of surface roughness
4215 : 1983	Needle bearings (*first revision*)
4905 : 1968	Method for random sampling
10707 : 1983	Instruments for measurement of surface roughness by profile method
12783 : 1989	Hard metal — Vickers hardness test

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